REMARKS

In response to the decision on appeal delivered by the Board of Patent Appeals and Interferences on December 22, 2009, Applicant has amended claims 1, 4, 9, 11, and 13. Claims 16-19 are canceled, without prejudice. No new matter has been added.

35 U.S.C § 102

Claims 11-15 and 24 were rejected under 35 U.S.C. 102(a) as being anticipated by Deinzer et al (WO 03/043112) using (US 2006/0172171) as an equivalent English translation.

The examiner stated:

> **The Deinzer reference discloses a fuel cartridge " 1 " comprising a housing containing and in direct contact with methanol and having at least a portion of a wall "lb" that is disposed adjacent the fuel egress port "la" of the cartridge that is comprised of metal; a fuel egress port "la" supported by the housing; and remaining walls "312" of the cartridge that are made of elastomer which is thermally insulating (See paragraphs [0064],[0067],[0072] and Figure 3).**
>
> **Examiner's note: The inner sleeve "312" is construed as being part of the wall of the housing.**

Amended independent claim 11 recites: "a housing, ... defining a fixed interior space to confine and to be in direct contact with a liquid source of an oxidizable fuel, ... the liquid source of oxidizable fuel in a vapor phase to the egress port of the cartridge." Support for the amendment can be found in the published specification, for example, paragraph [0057], and FIGS. 1, 2, and 8. Deinzer describes six embodiments of fuel cartridges (FIGS. 3-8) and none of the embodiments, alone or in combination, describes or would have made obvious the features of claim 11.

The first (FIG. 3), second (FIG. 4), third (FIG. 5), fifth (FIG. 7), and sixth (FIG. 8) embodiments of Deinzer *teach away* from "a housing ... defining a fixed interior space ...." In particular, each embodiment is a fuel cartridge having a fuel chamber 1c with a *movable* wall (partition wall 314 of FIG. 3, partition wall 414 of FIG. 4, inner jacket 512 of FIG. 5, piston surface 714 of FIG. 7, and movable piston 814 of FIG. 8). Deinzer *reduces* the interior space of the fuel chamber 1c by moving the movable wall to deliver the fuel from the chamber through the outlet 1a. Accordingly, in these embodiments, Deinzer neither describes nor would render obvious "a housing, ... defining a fixed interior space to confine and to be in direct contact with a

liquid source of an oxidizable fuel." It would not have been obvious to modify these embodiments of Deinzer to include a housing defining a fixed unchangeable interior space because Deinzer relies on the change of the space of his chamber to deliver the fuel to the exterior of his cartridge.

The fourth embodiment (FIG. 6) of Deinzer describes a cartridge including a bag that has a tube adjustable by a movable slide 618 (paragraph [0083]-[0084]). The bag is not "a housing, ... defining a fixed interior space to confine and to be in direct contact with a liquid source of an oxidizable fuel." In addition, the fuel is forced out of the bag by gravity and rotation of the pump propeller 617 (id.), and there is no "liquid source of oxidizable fuel in a vapor phase to the egress port of the cartridge."

The examiner stated:

> **The limitation "sinking heat generated from external components to enhance a delivery rate of methanol in a vapor phase to the egress port of the container" is construed as intended use. Therefore, this limitation is not given patentable weight. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.**

The applicant disagrees. The structure of embodiment six shown in Deinzer's FIG. 6 could not have "a deliver rate of methanol in a vapor phase to the egression port of the housing," at least because Deinzer's structure could not be used for vaporizing the fuel in the chamber 1c, let alone delivering the fuel in the vapor phase to the egression port of the housing.

Accordingly, amended independent claim 11 is patentable over Deinzer.

Dependent claims 12-15 and 24, which depend directly or indirectly from claim 11, are patentable at least for the reasons given in claim 11.

35 U.S.C § 103

Claims 1-10 and 16-22 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lawrence et al (US 2002/0197522) in view of Hirsch et al (US 2004/0209133).

The examiner stated:

> **The Lawrence reference discloses a fuel cartridge "39a" that supplies methanol to a direct methanol fuel cell comprising: a canister "92a" formed of anodized**

aluminum which is a thermally conductive material; a fuel bladder "86a" that is made of a plastic material which is thermally insulating; an exit port "88a", wherein at least a portion of the canister is disposed adjacent to the exit port (See paragraphs [0060],[0093],[0094]). It also discloses disposing a fuel cartridge "39" into a compartment of a portable electronic device "32" (See paragraph [0060]). It also discloses portable electronic devices such as computer laptops or notebooks (See paragraph [0064]).

However, Lawrence et al does not expressly teach a surface area enhanced planar vaporization membrane residing in the fuel cartridge. The Hirsch reference discloses a removable fuel cartridge that includes a methanol delivery film that is a pervaporation membrane made of polyurethane that causes liquid methanol in the fuel cartridge to undergo a phase change to a vaporous fuel before it is delivered to the anode of the MEA (See paragraphs [0012],[0050],[0070]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Lawrence fuel cartridge to include a surface area enhanced planar vaporization membrane residing in the fuel cartridge in order to allow for the use of a high concentration fuel while using passive water management capabilities (See paragraph [0012]).

Examiner's note: The Lawrence fuel cartridge as modified by the Hirsch methanol delivery film would inherently permit heat that is generated by the component in the portable electronic device to increase a vapor pressure of the fuel in the housing to cause the fuel to egress from the cartridge as a vapor.

Amended independent claim 1 recites "... a substantial fixed portion of the fixed interior space of the housing confining and being in direct contact with a liquid source of an oxidizable fuel." Lawrence teaches away from the features of claim 1.

Lawrence requires placing an expandable bladder 86 holding a fuel next to an expandable pressure member 87 within a canister 92 (FIG. 7 and paragraphs [0074]-[0076]). When an exit port 88 is penetrated, the pressure from the pressure member 87 pushes the fuel in the expandable bladder 86 out of the exit port 88 (paragraphs [0076]-[0077]). Lawrence's expandable bladder cannot be replaced by "a substantial fixed portion of the fixed interior space of the housing," because Lawrence's delivery of the fuel from the bladder 86 relies on the bladder to expand, so that the pressure from the pressure member 87 can be applied onto the fuel through the bladder.

Applicant contends that Hirsch neither describes nor renders obvious "a substantial fixed portion of the fixed, unchangeable interior space of the housing confining and being in direct contact with a liquid source of an oxidizable fuel," and Applicant submits that modification of Hirsch by Lawrence would not be suggested because Lawrence teaches away from including such features in his system and therefore, one skilled in the art would not have combined Hirsch and Lawrence.

Hirsch describes direct fuel feed to a electrode membranes of a fuel cell through a delivery membrane (FIG. 1 and paragraph [0047]). Hirsch does not include "a fuel egress port supported by the housing, ..., and the egress port delivering the oxidizable fuel in a vapor phase." It would not have been obvious to modified Hirsch to include the "fuel egress port supported by the housing" because Hirsch directly feeds the vaporized fuel to the electrode membranes and there is no need for a fuel egress port. Although Hirsch includes a fuel delivery regulation assembly to control the delivery rate of the fuel (FIG. 1), the fuel delivery regulation assembly is not an fuel egress port supported by the housing and does not deliver an oxidizable fuel in a vapor phase. Instead, the fuel delivery regulation assembly regulates liquid flow of the fuel from the fuel tank (paragraph [0056]).

Neither Lawrence nor Hirsch, alone or in combination describes or would have made obvious features of amended independent claim 1.

Claims 16-22 have been canceled without prejudice.

Dependent claims 2-10 are patentable for at least the same reasons discussed for independent claim 1.

Claims 23 and 25 were under 35 U.S.C. 103(a) as being unpatentable over Deinzer et al (WO 03/043112) using (US 2006/0172171) as an equivalent English translation as applied to claim 11 above, and further in view of Lawrence et al (US2002/0197522). Claim 26 was rejected under 35 U.S.C. 103(a) as being unpatentable over Deinzer et al (WO 03/043112) using (US 2006/0172171) as an equivalent English translation as applied to claim 11 above, and further in view of Hirsch et al (US 2004/0209133).

As explained previously, none of Deinzer, Lawrence, and Hirsch, alone or in combination, describes or would have made obvious "a housing, ... defining a fixed interior space to confine and to be in direct contact with a liquid source of an oxidizable fuel, ... the liquid source of oxidizable fuel in a vapor phase to the egress port of the cartridge," as recited by amended independent claim 11.

Claims 23, 25, and 26 dependent from 11 and are patentable for at least the same reasons discussed for claim 11.

It is believed that all the rejections and/or objections raised by the examiner have been addressed.

In view of the foregoing remarks, applicant respectfully submits that the application is in condition for allowance and such action is respectfully requested at the examiner's earliest convenience.

All of the dependent claims are patentable for at least the reasons for which the claims on which they depend are patentable.

Canceled claims, if any, have been canceled without prejudice or disclaimer.

Any circumstance in which the applicant has (a) addressed certain comments of the examiner does not mean that the applicant concedes other comments of the examiner, (b) made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims, or (c) amended or canceled a claim does not mean that the applicant concedes any of the examiner's positions with respect to that claim or other claims.

This Reply is accompanied by a Request for Continued Examination.

The fee for the Request for Continued Examiner is being paid concurrently on the electronic filing system by way of deposit account authorization. Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: February 17, 2010

/Denis G. Maloney/
Denis G. Maloney
Reg. No. 29,670

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110
Telephone: (617) 542-5070
Facsimile: (617) 542-8906